CAN THE ELECTRONIC TONGUE BE GIVEN A TASTE FOR LIFE? G. A. Konesky, Bovie Medical Corp., 3 Rolling Hill Rd, Hampton Bays, NY 11946-3716, g.konesky@att.net

Introduction: An integrated array of electrochemical sensors, termed the "electronic tongue," has been developed for in-situ determination of extraterrestrial geochemistry [1]. By noting the ability of a microorganism to modify its environment, but also making minimal assumptions otherwise, such a sensor array can be used as an electrochemically-based growth sensor [2].

A complimentary approach relies on the collection and detection of respiratory electrons [3], again without relying on any specific terminal electron acceptor.

Both approaches, unfortunately, are susceptible to local geochemistry posing as biochemistry. By combining strategies, along with techniques of variable sample size influence on time-resolved activity, a robust and reproducible system results for the remote detection of microbial life. Spaceflight hardware realizations benefit form small size, low weight, low power requirements, low data rates, and simple construction which is tolerant to shock and vibration. Experimental results are discussed.

References: [1] Kounaves, S. P. et al. (2002) *Environmental Electrochemistry*, ACS, Symp. 811, 306-319. [2] Kounaves, S. P. et al. (2001) *SPIE Proc. 4495,* 137-144. [3] Konesky, G. A. (2003) *IEEE Aerospace*, Vol. 2.07, 2.0704.